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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,882	10/23/2003	Robert M. Japp	END920000150US2	8999
30449	7590	04/29/2004	EXAMINER	
SCHMEISER, OLSEN + WATTS SUITE 201 3 LEAR JET LATHAM, NY 12033			EGAN, BRIAN P	
			ART UNIT	PAPER NUMBER
			1772	

DATE MAILED: 04/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/691,882

Applicant(s)

JAPP ET AL.

Examiner

Brian P. Egan

Art Unit

1772

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/23/03
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it is directed at the method of drilling a stack of metal articles. The presently claimed invention is directed at the article itself, not the method, and the Examiner therefore suggests amending the abstract to be in accordance with the claimed invention. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as his invention. Claim 4 refers to “the removable adhesive,” thereby referring back to the removable adhesive claimed in claim 1. The Examiner has interpreted claim 4 to mean, however, that a removable adhesive is being placed on both the top and bottom surfaces of the stack. Claim 1 only claims removable adhesive “between each sheet” and fails to claim adhesive on the top and bottom surfaces of the stack of sheets. Therefore, The Examiner suggests either claiming in claim 1 that the adhesive also is present on the top and bottom surfaces of the stack of sheets, or claiming

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separate adhesive layers in claim 4 rather than using the antecedent basis term “the” in referring back to claim 1. Proper clarification and/or correction are required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Weeks et al. (#5,227,606),

Weeks et al. disclose a structure comprising a stack comprising a plurality of sheets such that each successive sheet is coupled with a removable adhesive between each sheet (Col. 6, lines 20-26), and an opening extends through the plurality of sheets within the stack (see Fig. 3; see Abstract). The sheets may be selected from mild steel, stainless steel, alloy steel, aluminum, brass, and copper (Col. 3, lines 52-55).

6. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Hatch et al. (#4,929,370).

Hatch et al. disclose a structure comprising a stack comprising a plurality of sheets such that each successive sheet is coupled with a removable adhesive between each sheet, and an opening extends through the plurality of sheets within the stack. The sheets may be selected from copper (Col. 4, lines 31-46). The removable adhesive is in the form of a lubricant which is

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a water soluble polymer and/or water solution (Col. 5, lines 30-45). The adhesive layer helps produce smooth-walled drill holes, i.e., burr free holes (Col. 5, lines 37-40).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weeks et al. ('606).

Weeks et al. teach a structure as detailed above. Weeks et al. teach that the removable adhesive is a suitable viscous fluid that increases the surface tension effects and thereby generates adhesive forces between adjacent sheets (Col. 6, lines 20-26). Although Weeks et al. fail to explicitly state the use of fructose, sucrose, water soluble polymers, water, and water solutions, it is notoriously well known in the art that each of the aforementioned materials are viscous fluids that increase surface tension between adjacent layers. Therefore, Weeks et al.'s disclosure of suitable viscous fluids encompasses these aforementioned claimed materials absent demonstration of any unexpected results.

9. Claims 4-5, 10, and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatch et al. ('370) in view of Weinreich (#5,435,671).

Hatch et al. teach a structure as detailed above. Hatch et al. further teach the use of entry and exit materials positioned on opposing sides of the stack of sheets (Fig. 3, #s 34 and 36). The

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entry and exit material for the sheets is typically some type of paper base or thin metal sheet such as aluminum (Col. 6, lines 54-56). Although Hatch et al. teach the use of an entry and exit material layer, Hatch et al. fail to teach the use of a burr preventing layer/ foil layer combination as claimed by the Applicant.

Weinreich, however, teach the use of a multilayered entry/exit board comprising a paper board laminate impregnated with a lubricant and aluminum foil layer combination (see Fig. 1). The multilayered entry/exit board is taught by Weinreich for the purpose of resisting burr-formation during drilling (Col. 2, lines 21-46). It would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made to have combined the teachings of Hatch et al. and Weinreich since each of the aforementioned references are analogous insofar as being directed at entry/exit substrates for improving the drilling of stacked metal substrates.

Therefore, it would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made to have modified Hatch et al. to include a multilayered entry/exit board as taught by Weinreich in order to resist burr-formation during drilling.

With regards to the claim 14 limitation that there exists a plurality of stacks with intermediate burr-preventing layers, although Hatch et al. and Weinreich both fail to explicitly teach a multi-stack formation, modifying the aforementioned art to include a plurality of stacks would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 70. Here, the essential working parts of the invention are taught by Hatch et al. and Weinreich and one of

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ordinary skill in the art need only duplicate the base stack formation to be in accordance with the Applicant's claimed invention.

10. Claims 6-9 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatch et al. ('370) in view of Weinreich ('671), and further in view of Frater (#6,355,360).

Hatch et al. and Weinreich teach a structure as detailed above. The aforementioned prior art is silent with regards to the use of a three stainless steel plates on each side of the stack of metal substrates as well as a blotter pad within the three stainless steel plates. It is notoriously well known in the art, however, to provide at least three stainless plates in combination with a foil layer in the production of printed circuit boards as evidenced by Frater (Col. 2, lines 53-64). Frater teaches that it is generally well known in the art to use multiple steel plates to prevent and minimize scrap and rework due to image transfer and surface quality problems (Col. 2, lines 53-54). It would have been obvious to one of ordinary skill in the art at the time Applicants invention was made to have combined the teachings of Hatch et al., Weinreich, and Frater, since each of the aforementioned references are analogous insofar as being directed to improving the drilling operation in stacked metal formations.

Therefore, it would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made to have modified Hatch et al. and Weinreich to include a three layered stainless steel configuration on each side of the foil layer lying adjacent the top and bottom of the stack of sheets as taught by Frater in order to prevent and minimize scrap and rework due to image transfer and surface quality problems. It further would have been obvious to one of ordinary skill in the art to provide a paper (blotter) substrate between one of the steel

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plates since it is notoriously well known in the art to provide paper substrates in order to facilitate even application of pressure between opposing plates.

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hatch et al. ('370) in view of Weinreich ('671), and further in view of Block (#4,269,549).

Hatch et al. and Weinreich teach a structure as detailed above. Each of the aforementioned references detail the use of an aluminum foil layer but fail to teach the use of a copper foil layer other than Hatch et al.'s disclosure of stacked copper substrates. It is notoriously well known in the art, however, that although aluminum is generally a preferred foil material, functionally equivalent foil materials including copper, magnesium, and steel may also be used as the foil sheets in entry/exit board formations as evidenced by Block (Col. 2, lines 5-11). Therefore, absent demonstration of unexpected results, it would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made to have substituted the aluminum foil layer in both Hatch et al. and Weinreich with a functionally equivalent copper layer as taught by Block depending on the desired end product.

Related Prior Art

12. Although not relied upon in any of the above rejections, the Examiner would like to direct the Applicant's attention to several other pertinent references related to the Applicant's field of invention. These include United States Patent numbers:

5,507,603 to Nakano et al.;

4,781,495 to Hatch et al.;

5,961,255 to Korbonski;

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6,200,074 to Miller et al.;

4,311,419 to Block;

5,480,269 to Ejiri et al.; and

6,000,886 to Washio et al..

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian P. Egan whose telephone number is 571-272-1491. The examiner can normally be reached on M-F, 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Y. Pyon can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian P. Egan
BPE 4/22/04

Harold Y. Pyon
HAROLD PYON
SUPERVISORY PATENT EXAMINER
1772 4/26/04